Table 1: Example for the application of design rules and their consequences over the whole life cycle

Life cycle phase	*Activities*	**Result for the Siemens Mobile Phone Base Station BS 241**
Marketing, Planning, Conceptual and Detailed Design	Integrate expectations of customers; estimate impact over life cycle; derive development targets	A new cooling (–33% cost) system avoiding an active cooling by air and new patent cooling with membrane filter (= no heat exchanger)
Procurement, Production**	Reduce material Reduce weight	New subrack: 1 part/1 material, ca. –80% cost; former rack: 66 parts, 4 materials
*Sales and Service **	Information about disposal Documentation for customers	Service call by software and remote control (= less service costs)
*Use/ application**	Information about long useful life and product use in environmental favorable way	Power consumption reduced by –35%, sensitivity increased by +2dB (corresponding power reduction in cellular phones –37%)
Disassembly, Disposal**	Ease of disassembly	Total product: Nearly 100% recycling possible

* Planning happens during 'planning and development' phase

mental design rules have to be deduced including as many opportunities as possible (see example for rules of Siemens standard SN 36 350 part 1).

Conclusion

It is recommended to transfer the general standard to the company-specific management systems, tools and cultures. Practical experience is necessary to identify its limits in each case. The future development of this Technical Report to a management system standard may not be difficult – and even necessary as shown in the paper. The problem occurs in the variety of opportunities to be implemented. Again, the integration shall be tailored to the existing management systems, in particular ISO 9001/14001. In addition, the design engineer needs the freedom of choice. Therefore a solution for this difficulty is necessary before starting a new standardization step. As this Technical Report is the first global one, the feedback from applicants in the different regions of the world will be interesting. The EHS Gate Section for DfE serves as the necessary exchange platform for this feedback.

Literature

Ford Design Institute (2001): FMEA training manual. Dearborn
ISO TR 14062 (2002): Environmental management – Integrating environmental aspects into product design and development
Schmidt W-P (2002): Strategies for Environmentally Sustainable Products and Services. In: Corporate Environmental Strategy, Vol 8, No 2, p 118–125
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Book Presentations

Municipal Solid Waste Management Strategies and Technologies for Sustainable Solutions

Eds.: Christian Ludwig, Stefanie Hellweg, Samuel Stucki
Publisher: Springer-Verlag Berlin Heidelberg New York (http://www.springer.de) 2003; XX, 534 pp., 163 illus. Hardcover. 3-540-44100-X. Recommended Retail Price: EUR 129.00

Reference work, written for: Libraries, researchers and scientists (geochemistry, environmental science, process wengineering, technology, economy).

The environmental impact of traditional waste management practice has become a central concern in industrialized countries. The past decades have seen a dramatic development in the technology for reducing air pollution caused by incineration as stipulated by clean air policies in industrialized countries. Toxic and/or valuable and rare elements are still dispersed into the environment under current practice for the disposal of treated or untreated waste materials. This book results from the discussion among scientists, engineers and authorities; and hopes to contribute towards the implementation of future sustainable waste management practices.

Please note chapter 6 'Ecology: Which Technologies Perform Best?' written by Stefanie Hellweg, Gabor Doka, Goeran Finnveden and Konrad Hungerbühler. It includes an introduction to LCA, an LCA case study on waste treatment processes, and a discussion on long-term versus short-term impacts.

Electrical and Electronic Practical Ecodesing Guide

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Preface (by Jacqueline Aloisi de Larderel, UNEP and Laurent Grisel, PriceWaterhouseCoopers): This Electrical and Electronic Practical Eco-design Guide provides an insight into how the Electronics Industry can develop environmentally sustainable products. Evaluating the opportunities, risks, and trade-offs associated with products over their entire life cycle is now a fundamental element of company strategies on the road to sustainable development. This corresponds to the 'UN Guidelines for Consumer Protection' which were revised and adopted by governments at the UN General Assembly in 1999. The UN Guidelines call on governments, together with industry, to take into account the environmental impacts of products throughout their entire life cycle, in order to improve their environmental performance and respond to the demands of consumers.
This Eco-design Guide is also an important input into the development of cleaner and more resource efficient technologies for a life-cycle economy, as stated on 31 May 2000, in the 'Malmö Declaration' agreed upon by Ministers of the Environment. The Electrical and Electronic Practical Eco-design Guide is a practical application for the Electrical and Electronic Industry and an exiting follow-up of the UNEP publication 'Eco-design – A Promising Approach to Sustainable Production and Consumption'.